initially thermally point bonded continuous filament nonwoven fabrics, each of said layers comprised of polyester and having a basis weight of between 15 to 100 g/m^2, said layers being hydroentangled on a three-dimensional image transfer device together to form a cohesive and durable fabric having a basis weight of between about 50 to 600 g/m^2, said hydroentangled fabric being characterized by the substantial absence of thermal bonding in the layers and characterized by continuous filaments hydroentangled into an arrangement of packed loops and spirals that are substantially free of filament breakage and knotting, said cohesive and durable fabric being jet dyed.

REMARKS

Responsive to the Official Action mailed August 27, 2001, applicants have amended the claims of their application in an earnest effort to place this case in condition for allowance. Specifically, claims 1, 11, 13, 45, 47, 76, and 92 have been amended. Reconsideration is respectfully requested.

Applicants hereby affirm, with traverse, the provisional telephone election made on August 16, 2001, to prosecute the invention of Group I, including claims 1-13, 45-51, and 76-92. The present election is being made with traverse, since it is believed that all of the pending claims are sufficiently closely related in subject matter and scope as to facilitate their efficient examination in this application, without unduly burdening the Patent Examiner. Reconsideration is respectfully requested.

In the Action, the Examiner rejected a number of the pending claims under 35 U.S.C. §112, making reference to the term "substantially", and to claims 45 and 47, each calling for a web of substantially continuous thermoplastic filaments, with the web

"substantially free of filament ends intermediate end portions" of the web. First, it is believed that the word "substantially" is appropriate in the context of the present invention, wherein the resultant fabric structures principally comprise hydroentangled, continuous polymeric filaments, the objective of the present invention. It is recognized, however, that some relatively low percentage of the filaments may be subject to breakage, and thus the fabric structures are recited as consisting essentially of *substantially* continuous thermoplastic filaments. Revision of claims 45 and 47 makes it clear that the substantial freedom of breakage exhibited by the filaments results in the claimed structure being substantially free of filament ends (resulting from breakage) intermediate end portions of the recited structures.

In rejecting the pending claims under 35 U.S.C. §102 and §103, the Examiner has relied principally upon U.S. Patent No. 4,808,467, to Suskind et al., with further reliance upon U.S. Patent No. 6,200,669, to Marmon et al. It is believed that the present invention differs fundamentally from the teachings of the above-cited references, and accordingly, the Examiner's rejections are respectfully traversed.

As discussed in the specification, the present invention is directed to nonwoven fabric constructs which are formed substantially completely of *continuous filaments*, which are bonded and united into integrated fabric structures under the influence of *hydroentanglement*. In order to form fabrics of this nature, the present invention specifically contemplates that the continuous filaments be provided in the form of *substantially unbonded* or *lightly bonded*, continuous filament webs. By virtue of the unbonded or lightly bonded nature of these filamentary web structures,

hydroentanglement of the continuous filaments can be achieved, while the filaments are maintained in a substantially endless continuous form, *substantially without breakage,* as would ordinarily be expected to occur attendant to high-energy hydroentanglement of a spunbond filamentary web structure. It is respectfully maintained that formation of such a fabric structure is simply not contemplated in any way by the cited references.

The principal Suskind et al. reference is specifically limited in its teachings to the formation of a fabric formed from wood pulp fibers and staple length fibers, which are together entangled, such as by the use of water jets, with an associated continuous filament web layer. Significantly, this patent contemplates that there is substantially no hydroentanglement of the continuous filaments of the filamentary web layer, but rather, that this layer may remain substantially intact, while the wood pulp and staple length fibers are integrated therewith.

This is evident from study of the Suskind et al. specification. At column 1, lines 48 *et seq.*, the Suskind et al. patent characterizes that the disclosed fabric:

> [M]ay be produced which comprises web of continuous filament fibers and a soft, absorbent surface of wood pulp fibers mixed with staple length textile fibers intimately entangled with the continuous filament fibers. In one specific embodiment of this invention, a spunbonded web is formed in known manner and combined with an unbonded or lightly bonded air laid or water laid web of pulp and textile fibers by hydraulic entanglement.

In characterizing the continuous filament base web, the patent discloses:

> Bonding of the continuous filament web is essential when produced in a separate step, in which case the bonding area should not exceed about 15% of the total area of the web for best results. Bonding in the range of 6-10% area bonded is preferred. (Column 3, lines 11-16)

It is noted that the patent specifically teaches that the continuous filament web may have a bonded area as high as 25% (column 10, lines 42-44).

Thus, it is respectfully maintained that the Suskind et al. patent neither teaches nor suggests applicants' nonwoven fabric construct as claimed. As will be recognized by those skilled in the art, if the filament/wood pulp/staple length fiber structure of Suskind et al. is subjected to hydraulic energy comparable to that used in practicing the present invention, the energy would be absorbed by the integration of the wood pulp and staple fibers into spunbond web structures. In contrast, hydroentanglement of a filamentary web employed for practicing the present invention results in rearrangement and entanglement of the filaments themselves, without absorption of energy by associated pulp and/or fibrous layers.

In order to emphasize distinctive aspects of the present fabric, the pending claims have been revised to specify that the recited fabric "consists essentially of" substantially endless filaments, in accordance with M.P.E.P. §2111.03. As noted, this transitional phrase is considered to limit the scope of a claim to the specified materials or steps, and those that do not materially affect the basic and novel characteristics of the claimed invention (citation omitted). It is believed that this claim language best characterizes the present invention. The present fabric is, essentially, substantially endless continuous filaments which are hydroentangled to form a nonwoven fabric structure having a desirable combination of physical properties. Use of substantially unbonded or lightly bonded filamentary webs as starting material for formation of the present fabric permits the filaments to be hydraulically rearranged, while the filaments

are maintained in a substantially continuous and endless form. This is contrary to the teachings of the Suskind et al. reference, wherein substantial bonding of the continuous filament web of that fabric could result in breakage of the filaments if they are subjected to sufficient hydraulic energy as to effect their hydroentanglement. Such breakage would not necessarily be envisioned in Suskind et al., since it is understood that integration of the wood pulp and staple length fibers with the continuous filament web of the fabric is the contemplated objective.

In the Action, the Examiner has cited the secondary Marmon et al. patent as teaching bonding fibers of a substrate by thermal point bonding, followed by hydroentangling of the bonded multi-component fibers. Notably, a study of this reference shows that it fails to overcome the deficiencies in the teachings of the principal Suskind et al. reference, and also teaches away from applicants' novel fabric.

Marmon et al. contemplates use of multi-component fibers, which are sometimes referred to as "splittable" fibers, by virtue of the manner in which such fibers can be separated into their constituent components under the influence of certain processing conditions. As discussed at column 6, lines 16 *et seq.*, Marmon et al. contemplates that multi-component fibers are *bonded* to form a bonded substrate of multi-component fibers. The patent goes on to state:

> The bonded substrate of multi-component fibers may then be entangled creating a highly entangled nonwoven fabric with significant separation of individual components from the unitary multi-component fibers.

A study of this patent shows that it clearly does not contemplate hydroentanglement of the continuous filaments provided from an unbonded or lightly

bonded web structure. Rather, this patent specifically contemplates that the multi-component fibers be *bonded* prior to hydroentanglement. At column 9, line 26 *et seq.*, the Marmon et al. patent states:

> In this regard it has been discovered that by bonding the continuous unitary multi-component fibers prior to entangling, the resulting nonwoven web has a higher degree of fiber separation and, therefore, improved tactile and physical characteristics. Moreover, the added integrity imparted to the web by bonding significantly reduces and/or eliminates problems associated with the multi-component fibers being entwined on the hydroentangling apparatus.

This, it is respectfully maintained that this patent clearly fails to teach or suggest formation of a hydroentangled, continuous filament web structure, wherein the desired physical characteristics of the web structure are achieved by hydroentanglement, without resort to heat bonding or like bonding of the web. It is within the purview of the present invention to form multi-layer constructs, including plural laminations, each consisting essentially of a web of substantially continuous polymeric filaments, such as specified by claim 47, and the claims depending therefrom.

Differences in the present invention from the teachings of Marmon et al. are emphasized by claims 76 and 92, and the claims depending therefrom, which specify plural layers of *initially* thermally point bonded nonwoven fabrics, with the resultant fabric structure being characterized by a substantial *absence* of thermal bonding in the layers.

In conclusion, it is respectfully maintained that there is a clear absence in the teachings of the prior art of forming a nonwoven fabric which consists essentially of

substantially continuous filaments united and integrated by hydroentanglement, while avoiding breakage of the continuous filaments, thus obviating the need to effect heat-bonding or the like to achieve desired physical properties. Accordingly, it is respectfully submitted that claims 1-13, 45-51, and 76-92 are in condition for allowance, and such action is respectfully solicited. Should the Examiner wish to speak with applicants' attorneys, they may be reached at the number indicated below.

Respectfully submitted,

By _____
Stephen D. Geimer, Reg. No. 28,846

ROCKEY, MILNAMOW & KATZ, LTD.
180 North Stetson Avenue, Suite 4700
Chicago, Illinois 60601
312/616-5400
December 27, 2001

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with the United States Postal Service with sufficient postage at First Class Mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on **December 27, 2001**.

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